



The **Plantsman**

NEW HAMPSHIRE PLANT GROWERS ASSOCIATION

AUGUST & SEPTEMBER 1996



The Plantsman

NEW HAMPSHIRE PLANT GROWERS ASSOCIATION

AUGUST & SEPTEMBER 1996



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August

AUGUST 17 *Fifth Annual Plant Sale & Rare Plant Auction*, The Fells, Newbury, NH; 603-763-4789.

AUGUST 18 *First Annual Rockingham County Open Farm Day*; information: Nada Haddad at 603-679-5616.

AUGUST 21 *VAPH Summer Meeting*, Claussen's Florist & Greenhouses, Colchester, VT; Connie Gardner at 802-253-8565.

AUGUST 23 *Second Annual Horticulture Field Day*, University of Maine, Orono; Paul Cappiello at 207-581-2918.

AUGUST 29 *UMASS Extension IPM Workshop—"Recognizing and Diagnosing Problems of Turf,"* 3-5 pm, Waltham, MA; Kathleen Carroll at 413-545-0895.

September

☼☼☼ WEDNESDAY, SEPTEMBER 11 *NHPGA Twilight Meeting*, Murray Farms Greenhouse, Penacook, NH; information: Dave Murray at 603-753-6781

SEPTEMBER 12 *Massachusetts Nursery & Landscape Association (MNLA) Compost Conference—a Twilight Meeting* (4-8 pm) at Laughton's Nursery, North Chelmsford, MA; Rena Sumner at 413-369-4731.

SEPTEMBER 13-29 *Eastern States Big 'E,'* West Springfield, MA; mailing address: 1305 Memorial Ave., W. Springfield, 01089; phone: 413-737-2443.

SEPTEMBER 14 *Floral Workshop*, Andover, MA; for registration and information: Dr. Peter Konjoian at 508-683-0692 (fax: 508-683-6962).

SEPTEMBER 21 *Granite State Landscape Architects (GSLA) All-day Charrette*, Russ Martin Park, Concord, NH; information: Bill Hoffman at 603-735-5827.

SEPTEMBER 21-22 *Joint Meeting NH/VT FTDA, "The Rose Bowl"* at Sea-groatt Riccardi, Albany, NY (1-800-724-1112), information: Betty Covey at 603-893-4578.

October

OCTOBER 1-5 *Professional Plant Growers Association (PPGA) 29th Annual International Bedding Plants Conference & Trade Show*, Dearborn, MI; 1-800-647-7742.

OCTOBER 5-6 *UConn's 50th Annual Horticulture Show*, Hicks Arena, Storrs, CT; 860-486-3435.

OCTOBER 19 *FFA Horticulture Career Day*, Thompson School, UNH, Durham, NH; Dave Howell at 603-862-1760

OCTOBER 19-21 *The 24th Annual Conference of the American Horticultural Therapy Association*, Sturbridge, MA; information: Richard Shaw at 401-874-5996.

OCTOBER 20 *Agricultural Expo '96*, Hartford Armory, Hartford, CT; CT Dept. of Agricultural Marketing at 860-566-4845.

OCTOBER 21-23 *New England Greenhouse Conference*, Sturbridge Host Hotel & Conference Center, Sturbridge, MA; information: Henry Huntington at 603-435-8361.

OCTOBER 27 *FTDA District 1-C Meeting*, 5-8pm, Searles Castle, Windham, NH; Betty Covey at 603-893-4578.

November

NOVEMBER 12-13 *MNLA Business Short Course*, co-sponsored by MNLA & UMASS Extension; Westboro, MA; Rena Sumner at 413-369-4731 or Kathleen Carroll at 413-545-0895.

Looking Ahead...

JANUARY 8-10 *Erna's Expo 97*, The Meadowlands Exposition Center, Secaucus, NJ; to register: 1-800-376-2463

JANUARY 30-FEBRUARY 1 *New England Grows*, Hynes Convention Center, Boston, MA; call 508-653-3009 or fax 508-653-4112.

FEBRUARY 7-8 *Farm & Forest Exposition*, Center of New Hampshire Holiday Inn & Convention Center, Manchester, NH; 603-271-3788.

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About the Cover:

For more information about the front cover illustration, please turn to the back cover.

The *Plantsman* is published in early February, April, June, August, October, and December with copy deadlines being the first of each prior month. While camera-ready ads are preferred, set-up assistance is available at a nominal fee. Free classified advertising is offered as a member service. We will carry a short message (no artwork or logos) for one or two issues of *The Plantsman*.

AD SIZE		6x	1x
3 3/8" w	x 2 1/4" h	\$120	\$30
3 3/8" w	x 4 3/4" h	\$160	\$40
7" w	x 2 1/4" h	\$160	\$40
7" w	x 4 5/8" h	\$250	\$50
7" w	x 9 1/2" h	\$400	\$100

For further information, please contact the editor: Robert Parker at the UNH Research Greenhouses, Durham, NH 03824, 603-862-2061; or PO Box 5, Newfields, NH 03856, 603-778-8353.

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Notice

Dear NHPGA Member:

Your Association is currently exploring the possibility of purchasing electricity as a group, beginning in January of 1998. At this time, there is a pilot program allowing competition among different electric utility companies in the state of New Hampshire. This pilot program has 17,000 participants throughout the state. If you are one of these participants, please contact Bob Rimol at 425-6563 to provide input on who you are using as a provider, how you chose your provider, and the service given. This information will

help us in our search for different providers of low-cost energy for our future. Thank you. —Bob Rimol

The Fact Is...

In 1994, lawn & garden retail sales in New Hampshire totalled \$272,000,000. This was more than Vermont (\$151 million) and less than Maine (\$335 million). The New England state with the most sales was Massachusetts (\$1,780,000,000.). The state nationwide with most sales was California (\$6,936,000,000); the state with the least, Alaska (\$128 million). (from *Nursery Retailer*, February/ March, 1996.)

In Salem—in the Woods Where the Birds Sing...

Twilight meetings have always been an opportunity for NHPGA members to meet on a more personal basis—to visit neighbors and tour businesses one might otherwise not get to see. Numbers vary—sometimes only a half dozen people attend; sometimes, a lot more. What's important is the opportunity to meet and learn. The Twilight Meeting at Lake Street Garden Center on June 18 was especially instructive because the changes Frank and Mary Wolfe and their staff have dealt with—population growth, warehouse chains—are ones that will affect everyone in the business eventually. And Lake Street Garden Center has dealt successfully.

We thank Frank and Mary and staff for their hospitality: the tour offered plenty of insights, the food was delicious, and the ideas the visitors brought home with them will definitely be useful in the future.

Fall Courses at the Thompson School

This is a partial listing of horticulture courses offered this fall at the Thompson School. Some courses may have prerequisites (courses or experience). Additional courses of interest are offered at UNH in Plant Biology. The fall semester runs from September 3 to December 13, 1996.

You may enroll in these courses by phoning the Division of Continuing Education at 603-862-2015. Make sure you get on their catalog mailing list too. For more information on course content, the part-time associates degree program, or the diploma in landscape horticulture, call 603-862-1035.

HT205 *Introduction to Plant Materials*, 2 cr. Lecture F 10-11, Lab M 1-3 or F 1-3

HT207 *Plant Structure and Function*, 3 cr. Lecture MW 10-11, Lab T 10-12 or T 2-4

HT215 *Soils and Land Use*, 2 cr. Lecture MWF 11-12, Lab Th 10-12 or Th 2-4, (First 7 weeks only)

HT217 *Soils and Plant Nutrition*, 2 cr. Lecture MWF 11-12, Lab Th 10-12 or Th 2-4, (Second 7 weeks only)

HT219 *Computers in Horticulture*, 2 cr. W 3-5

HT237 *Pest Management: Weeds*, 1 cr. M 1-4, (First 7 weeks only)

HT239 *Pest Management: Control Applications*, 1 cr. M 1-4 (Second 7 weeks only)

HT254 *Water Management*, 2 cr. F 10-1

HT257 *Woody Landscape Plants*, 2 cr. W 8-11

HT263 *Landscape Construction and Maintenance*, 4 cr. Lecture MW 11-12, Lab W 1-5

HT275 *Floricultural Crop Production*, 3 cr. TTh 8-10

AM261 *Internal Combustion Engines: Principles and Maintenance*, 3 cr. Lecture F 9-10, Lab M 8-11

FT264 *Arboriculture*, 3 cr. M 10-11, F 8-12

CLASSIFIEDS

We are a wholesale greenhouse looking for an experienced grower interested in producing both florist quality potted crops for local sales and young plants for national distribution. Our growth has made it necessary to search for someone with solid knowledge in technical growing. The candidate must be able to understand lab results and make recommendations based on these. Our two acres of both poly and Dutch glass houses are state-of-the-art, along with our goal of quality production. Please send resume, with references, to: Mr. Douglas S. Cole, President, D.S. Cole Growers, Inc., 251 North Village Road, Loudon, New Hampshire 03301.

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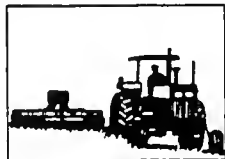
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Fisher Selected

The position of Dr. Owen Rogers, who recently retired from the Department of Plant Biology, has been filled. The new person is Dr. Paul R. Fisher, currently a post-doctorate researcher at the Department of Environmental Horticulture at the University of California, Davis.

Originally from New Zealand, his undergraduate and masters degrees were received there. He received his Ph.D. from MSU in 1995; his dissertation was on "Prediction and Control of Stem Elongation and Flowering in Poinsettia and Easter Lily;" Royal D. Heins was his advisor.

Research activities noted on his resume included developing Greenhouse CARE System, "a computer extension tool that is the world's first commercially available simulation model and expert system for the ornamental greenhouse industry." He's presently working on crop modeling of ornamental potted plants—modeling the carbon budget of a rose plant stand and predicting harvest of lily populations.

Research interests include: "applied research on ornamental crop species, biological modeling, development of decision-making tools, and sustainability."

Industry-oriented and seeing New Hampshire as a good place to raise a family, he began his work here in mid-August and is expected to make his presence felt throughout the Green Industry.

Mautz Chosen

(from *Campus Journal*, May 22, 1996)

William Mautz, professor of wildlife ecology, is the new dean of the College of Life Sciences and Agriculture. Mautz earned his bachelor's degree in biology at the University of Wisconsin and doctoral degrees in wildlife ecology and management at Michigan State University. He



came to UNH in 1969 as an assistant professor of wildlife ecology and was responsible for establishing the Brentwood Wildlife Research Facility, a state-of-the-art complex for studying wildlife energetics. He's served as interim dean since 1994 and in this role, has, among other things, continued the major planning effort begun by former dean Tom Fairchild and helped the UNH Foundation with fund-raising activities that have resulted in a \$3.5 million endowment to benefit several programs in the college.

While interim dean, Mautz has attended several NHPGA functions and this promises an realistic understanding of the Green Industry and its relationship to the college.

A Major Restructuring

Last winter, an outside review team looked at ornamental horticulture programs within the College of Life Sciences and Agriculture (COLSA). Programs in research, teaching, and extension were looked at. As a result of the team's recommendations, the following changes have been made to more effectively identify, develop, and deliver Extension educational programs to the Green Industry. The industry has been divided into four segments—turf, greenhouse, nursery/landscaping, and garden center. For each segment, there will be a program coordinator

responsible for working with an advisory group to identify and develop needed programs. These programs will utilize appropriate UNHCE staff as well as resources from outside New Hampshire. The following staff members have agreed to assume some additional responsibility for this new direction:

NANCY ADAMS: Greenhouse (including outdoor cut flowers)

RALPH WINSLOW: Nursery/Landscaping (including perennials)

DAVID SEAVEY: Garden Centers

CHERYL SMITH: Contact with the Plant Biology Department and Campus Specialists

John Roberts will continue to provide leadership for the turf industry, especially in the areas of municipal and recreational turf. Charlie Williams will devote more time to applied research, demonstration sites, horticultural therapy, and information for consumer horticulture. The entire Ornamental Horticulture Team, which consists of all staff that is involved with the Green Industry, will meet on a periodic basis to look at the industry as a whole and insure coordination between the various segments.

For more information, contact Bruce Marriott at 603-862-2033.

Locating the Analytical Services Lab

Stuart Blanchard

After over two decades in Nesmith Hall, the Analytical Services Lab has moved to the newly renovated Spaulding Life Science Center, Rooms G-54/55. Although our new facilities are much improved over those in Nesmith, Spaulding is less accessible to visitors, partly because it is located nearer the center of campus. We hope to eventually

have two visitor parking spaces near an entrance, but right now, there is essentially no parking close-by.

We strongly urge all homeowners (except local residents who are familiar with the campus) to use our business envelopes when submitting samples. These are supplied with all Homeowner Soil-Testing forms. Cost for using these envelopes is an additional \$2.00 for the first sample and \$1.00 for the second in the same envelope.

For commercial firms with multiple samples, services such as UPS, Federal Express, etc., may provide the most cost-effective way of submitting samples.

For those delivering samples in person, after entering Durham, proceed to Main Street. Follow Main Street to the only traffic light in

town (across from the new Whittemore Center), and turn onto College Road.

Follow College Road (which becomes McDaniel Drive after Rudman Hall). Turn left onto Mitchell Way, then left again onto the "old" College Road (mostly reserved for pedestrians), where metered parking is along its edge. Enter through the end of Spaulding, go down one flight of stairs, and proceed to G-54 at the end of the hallway. (The lab is in G-55. Submit samples in G-54, but if you need assistance, feel free to ask anyone in the lab.)

Or, if you continue along "old" College Road, you will reach Spaulding's loading dock area, where there may be space for parking. Do not block fire lanes, dumpsters, etc. Again, enter through the end of

Spaulding and down one flight of stairs, etc.

You may also park at the UNH Visitors' Center (across from the Research Greenhouses), where you can request a map of the campus and information on parking and shuttle services. The Visitors' Center has visitor-designated parking, but it's a ten-minute walk to Spaulding.

Stuart Blanchard is head of the Analytical Services Lab, Spaulding Life Sciences Center, Room G-54, 38 College Road, Durham, NH 03824-3544; the phone number there is still 603-862-3210.

Other New Addresses

Most Extension specialists have moved to Spaulding. Directions to the building remain, of course, the same for whomever you wish to see.

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Many specialists are situated fairly close to the main entrance. Extension secretaries Cheryl McKenney (862-3200) and Charlotte Cooper (phone: 862-3201) are in Room 117; Otho Wells (862-3208) and John Roberts (862-3202) have offices off the secretaries' (Rooms 113 and 115, respectively). Jim Mitchell (862-3204) is in Room 135; Bill Lord (862-3203) in 137; Charlie Williams (862-3207) in 133.

On the floor above them, entomologists are located in one area. Stan Swier (862-1733) is in Room 254; Alan Eaton (862-1734) in 252; John Weaver (862-1737) in 248.

Cheryl Smith (862-3841), plant health specialist, is in Room 242.

Obviously, this is a partial list. The secretaries will help you find other people. It's a different building—bigger, brighter—but its unfamiliarity

should not prevent anyone from using the services that have always been available.

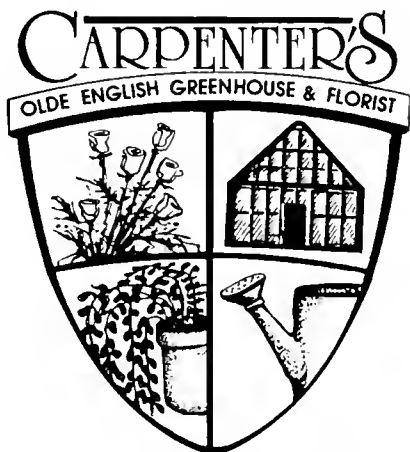
(It should also be mentioned that, especially in summer, people are out of their offices—doing field work, etc.—and that if you call, quite often you will be answered by voice mail, a recorded voice that asks you to leave a message. You should not be surprised if this happens. If this bothers you, call the secretaries directly. They can connect you or, if the person's not in, leave a written message for you.)

A Substantial Amendment

(from *Space*, newsletter of S.P.A.C.E., New Hampshire's Current Use Coalition, Summer, 1996)

Governor Steve Merrill signed

into law House Bill 1580, which substantially amends the "discretionary easement" portion of NH's current use law. The new legislation allows landowners with fewer than ten acres (or who own land that does not currently qualify for current use) to petition their selectmen for current use taxation, if they can show that doing so meets a demonstrated public benefit. Criteria for evaluating public benefit are spelled out in detail. As in the previous law, selectmen still have the right to deny the request, but the law provides a right of appeal to the landowner. Copies of this legislation may be obtained by calling the S.P.A.C.E. office at 603-224-3306.



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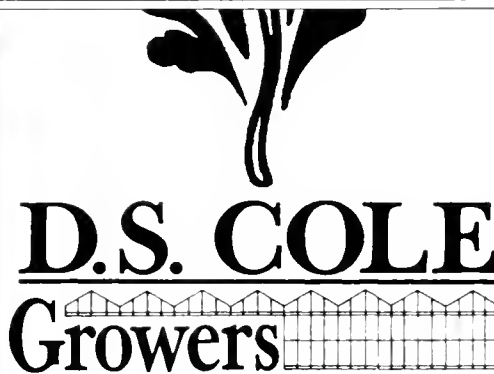
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American Horticultural Therapy Association Conference

Taking place in Sturbridge just prior to (and on Monday, combining with) the New England Greenhouse Conference is the 24th Annual Conference of the American Horticultural Therapy Society, co-sponsored by the New England Chapter of AHTA and New England Floriculture, Inc.

On Saturday, October 19, participants will visit regional HT programs and on Sunday, a wide range of topics (therapeutic garden design, horticulture as therapy with children in a mental health agency, HT use in substance abuse treatment, etc.) will be presented. On Monday, there will be topics—hiring the disabled, designing for public accessibility, therapeutic landscapes—of interest to participants in both conferences.

New England Greenhouse Conference

Although most readers have by now received announcements and program schedules of the 1996 New England Greenhouse Conference in Sturbridge on October 21-23, it's good to be reminded of the value of attending. Speakers during the three-day conference include John Irwin (the Internet and also about growing New Guinea impatiens); Art Cameron (forcing perennials in pots); Chris Kraft (motivational and employee-related topics); Adrian Bloom from Blooms of Bressingham is keynote speaker at the banquet.

Local speakers well-known to our readers include Henry Huntington (Proven Winners), Peter van Berkum (perennials), David Brock (the Internet) and Peter Konjoian (Computers for Signage).

All this and more makes atten-

dance worthwhile.

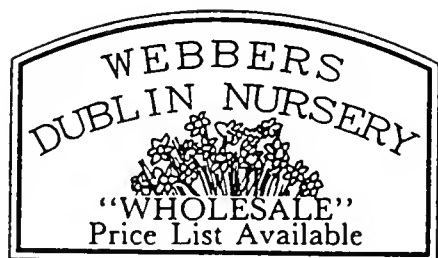


It was reported in the last issue of *The Plantsman* that the New England Greenhouse Conference has been incorporated as New England Floriculture, Inc. More news is that the 1998 conference will probably be held in Worcester. A convention center is being added to the Centrum. Described as "a beautiful facility in a revitalized section of the city, with plenty of hotel space within walking distance, lots of good restaurants, and best of all, a lot more space for our convention and trade show," the change, although Sturbridge has always been fine, sounds positive and exciting.

Washington Bill Exempts Poly Houses

(from *Greenhouse Management & Production*, June, 1996)

On March 25, Washington governor



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Mike Lowry signed a bill that standardizes the way hoop houses are regulated throughout that state.

Before passage of the law, growers wanting to build hoop or poly houses had long complained of inconsistent treatment, depending on the county in which they were located. In some, no permits were necessary; in others, growers were told to meet strict requirements that applied to homes, stores, and office buildings.

The bill, SSB 6214, attempts to correct these inconsistencies. The bill states that the code does not apply "to temporary growing structures used solely for the commercial production of horticultural plants, including ornamental plants, flowers, vegetables, and fruits" and defines a "temporary growing structure" as one that has "the sides and roof covered with polyethylene, polyvinyl, or similar material."

For more: Washington State Nursery & Landscape Association, 1006-D

Fryar Avenue, PO Box 670, Sumner, WA 98390-0670; phone: 206-863-4482; fax: 206-863-6732.

An "Unbelievable" Chemical—Next Year

(from *GrowerTalks*, June, 1996)

Cinnacure, a new fungicide and insecticide, has been proven to control both diseases and insects within minutes of contact. Diseases include powdery mildew, rust, rhizoctonia, and dollar spot; insects: aphids, mites, leafhoppers, whiteflies, and thrips. It hopefully will be labelled for floriculture and nursery crops, outdoor field flowers, bedding plants, landscape ornamentals, interior plants, and turfgrass.

It's biorational—meaning it mimics natural material. The active ingredient, cinnamaldehyde, is found in Sri Lankan and Chinese cinnamon oils.

It has low toxicity, requires low

dosages for control, has minimal risk to worker health, and is compatible with natural enemies used for biological control; potential for ground water contamination is low. Materials like this are classified as reduced-risk pesticides by the EPA and are often given a "fast track" for registration, but Cinnacure probably won't be registered before 1997.

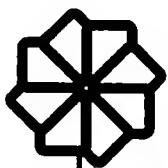
A Useful Publication

A new 100-page publication from the Northeast Regional Agricultural Service (NRAES), *Water and Nutrient Management for Greenhouses*, provides managers for guidelines for fulfilling crop nutrient needs while minimizing environmental risk.

The book begins by talking about nutrient needs, proper methods for collecting and submitting leaf samples for analysis, and how to interpret these analyses; it explains the units

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TIPS FROM THE GRIFFIN GURU



"I'm Going to Throw Up a Greenhouse..."

For many reasons, you're going to need some more greenhouse space next spring and the best way out is to throw up one of those pipe frame jobs with a poly cover—that is until you find out that someone down at the town hall has a book of rules you have to go by.

We've seen more cases than ever before of—after the frame's been ordered and the deposit given—there being no permit to erect it. In some cases, after the house is up and covered, the owner's told to take it down because he didn't get permission to put it up in the first place.

There are those who, in their zeal to protect, have changed the procedure, thus establishing a much lengthier and more complicated way of reaching the goal. That's not to say this is wrong or that, as a supplier, we can't assist you by offering the information needed to comply.

The best way is to ask questions before you start. In most cases, the real problems are time and money, not the rules and weather.

used to measure fertilizer quantities.

Subsequent chapters discuss irrigation water standards, water management, and several types of irrigation systems. Fertilizers and substrates are discussed at length. A final chapter defines the features of a well-designed water and nutrient delivery system and reviews the pro-and-cons of leached and zero-runoff systems. The text is illustrated with numerous tables, figures, example calculations, etc.

Water and Nutrient Management for Greenhouses, NRAES, is available for \$20.00 per copy from NRAES, Cooperative Extension, 152 Riley-Robb Hall, Ithaca, NY 14853-5701; postage and handling are included in US orders only; please call for exact foreign postage and handling costs. The phone number is 607-255-7654.

'Compass Harbor'

(from *Maine Landscape & Nursery Association Newsletter*, March, 1996)

At the Littlefield Garden at the Uni-

versity of Maine in Orono, research on cold-tolerant trees, shrubs, and groundcovers appropriate for northern landscapes is ongoing.

Crowberry (*Empetrum nigrum*) is a Maine native evergreen groundcover with a textured foliage similar to that of heather. It's tolerant of salt, dry soil, and a moderately high pH and requires full sun. Several forms with improved plant/branch density have been selected and evaluated for several years. One superior form has been named *E. nigrum* 'Compass Harbor' and is in the initial stages of propagation for likely introduction in late 1996 or early 1997.

For more information, contact Paul Cappiello, Associate Professor, Landscape Horticulture at the University of Maine in Orono. His number is 207-581-2918.

('Compass Harbor' and other research projects can be seen at the Second Annual Horticulture Field Day at the University of Maine in Orono on August 23. Along with trade show, Lobster Shore Dinner, volleyball, and

assorted "unwind" activities, there are tours of the research projects. And one of the presentation topics is "Cold Tolerance Evaluation of Selected Cultivars in Mountain Laurel, *Viburnum* and *Magnolia*.")

NH Fairs—1996

(telephone area codes are 603)

AUGUST 17-18 *Belknap County 4-H Fair*, Mile Hill Road, Belmont; Sue Roberts, 267-8135.

AUGUST 21-25 *Plymouth State Fair*—take Exit 26 off I-93; Russell Merrill, 536-1690.

AUGUST 28-SEPTEMBER 2 *Lancaster Fair*, Route U.S. 3, Lancaster; Paul Thurston, 788-4531.

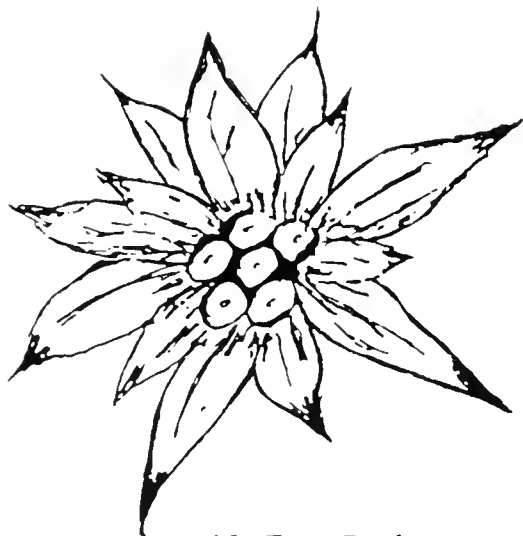
AUGUST 29-SEPTEMBER 2 *Hopkinton State Fair*, Contoocook Fair Grounds, Contoocook; Alan Hardy, 746-4191.

SEPTEMBER 6-8 *Hillsboro County Agricultural Fair*, Route 13, New Boston; John Robertson, 588-6106.

SEPTEMBER 12-22 *Rochester Fair*, 72 Lafayette Street, Rochester; Jeffrey Taylor, 332-6585.

SEPTEMBER 26-29 *Deerfield Fair*, Route 43, Deerfield; Jane Boucher, 463-7421.

OCTOBER 12-14 *Sandwich Fair*, Center Sandwich; Earle Peaselee, 284-7062.



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For Kids...

Gardeners of the Future

Tanya Jackson

**"Inch by inch, row, by row, gonna make this garden grow.
All it takes is a rake and hoe and a little bit of love."**

New Hampshire's own Shaw Brothers often sing this little song at their performances. Of course, those of us who make horticulture our business know that gardening takes a great deal more than that. It takes learning—every day, a pleasure in hard work, appreciation for the beauty and good eating that we create from seeds and soil and sunlight and rain, and—yes—luck.

I truly believe we need to work at passing this joy of gardening along to children. They are our future and gardening—in all its guises—is important to that future. Not all kids learn about gardening as a matter of course these days. Family farms are no longer common and not everyone grows a vegetable garden—once a staple of family life. But a small garden grown by or for a child can help nurture this love of soil and growing things that we need to keep alive for the future.

Kids' gardens are fun. Kids love bright color, unusual textures and smells—unusual plants in general, plants with funny names, and, of course, plants that taste good.

In the Kids' Garden at the Urban Forestry Center (managed under the jurisdiction of the New Hampshire Division of Forests and Lands, Department of Resources and Economic Development) on Elwyn Road in Portsmouth, we try to add each year to what is already there. We seek input from kids and these are some of the features we've come up with together.

A "Smelly Garden"—a tub of plants containing peppermint, anise hyssop (strongly scented of licorice), perhaps an oregano thyme (a pizza scent to kids), maybe onion chives or garlic chives, and certainly a Jacob's Ladder Plant (*Polemonium caeruleum*), whose flowers smell just like grape KoolAid—can both teach and entertain.

And a "Fuzzy Garden" could contain lamb's ears, lychnis, Silver Mound artemisia, and perhaps a thick flannel-leaved mullein plant.

There are lots of structures for kids' gardens. Most popular, probably, is the Bean Tepee, several poles placed in a circle and fastened together at the top. This is a great way to show off vining plants—beans are good

for a lot more than just eating. Plant your tepee with hyacinth bean for the beautiful (and tasty) flowers. The brilliant red flowers of the Scarlet Runner bean attract hummingbirds. And Parks Early Riser pole bean is one of the best I've eaten—it makes a broad flat bean that is tender and delicious and will produce for a long time if the beans are kept picked off and not allowed to mature. Kids (and my dog—who loves beans) do a fine job at this. These pole beans are tasty right off the vine!

We have a "whirly-gig" trellis built of poles and whip-like branches swirled around a central pole, a wattle fence (similar to those found in England) for gourds to climb, and several other tepee-like set-ups for such flowering vines as balloon vine, sweet peas, and a tall "Red Pear" tomato that bears delicious little red pear-shaped bite-sized fruits. Sweet 100s would be another tomato this is great for a kids' garden. It's indeterminate, thrives on a pole or trellis, and tastes great. (It's a good idea to make sure that all plants in a kids' garden are edible, so morning glories and their relatives—lovely, but poisonous—are out.)

Make gardening fun for kids by doing things with the vegetables they might like to grow. Pumpkins at the edge of your garden could bear a greeting for everyone. Simply carve the word "Hello" in the tender outer skin of an immature pumpkin. As the pumpkin grows, the word grows too. A big friendly smile carved on another nearby can say it all!

We have a Rainbow Garden—a series of concentric arches, each planted in a color of the rainbow—at the Urban Forestry Center. Pale blue ageratum, a deeper violet shade of ageratum, and a row of green Swiss chard complement the Yellow Boy and Orange Boy marigolds and red salvia. There's even a pot of gold (marigolds) at the end. Adults as well as kids love this big colorful arch and enjoy sitting on the bench facing it.

And our Sunflower Forest contains several hundred sunflower plants, both short and tall. It's fun to walk on the path down the middle of the "forest," look up at the tall nodding heads, and measure your height against

that of a simple (but ever so interesting) flower.

Plants with animal names interest children. There are spider flowers and pink turtlehead, false dragonhead and snapdragons and leopard's bane...a lot from which to design your own display. (This may be our next year's addition.)

I hope you'll visit the Kids' Garden at the Urban Forestry Center. It's for the kid in all of us. And I hope the ideas you see there will inspire you to make a place in your business to encourage and sustain a love of gardening in today's children. Garrison Keillor says, "Nothing that you do for kids is ever wasted." I think he's right.

Tanya Jackson, a well-known area herbalist, can be reached at 603-431-6774.



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A change is beginning to occur in our industry—from the largest manufacturers in the world (Ciba and Sandoz) to the smallest grower—and it's called consolidation. The largest in both the greenhouse and nursery business continue to expand. Companies like Weiss of Long Island—the largest greenhouse operation in the United States—now produce plants from New York to Florida, shipping virtually over the entire country. Nurseries like Imperial and Monrovia are similar. The big are getting bigger—which makes me wonder what will happen to the rest of us.

When you look at a profile of our core businesses, from grower to distributor to manufacturer, you'll see that for many years, we were either family-run or a tiny department in a larger enterprise.

This has changed. The buying habits of the American consumer have helped develop the chain store industry with its acres of selling space. The same trend is occurring in the greenhouse/nursery industry, where a much smaller group of growers will soon make up 80% of total production. Distributors must now carry larger inventories to keep up with the needs of these growers.

How the medium-to-small grower will handle this is anybody's guess.

In the nursery trade, the smallest growers are being squeezed the fastest. The greenhouse grower has a little breathing space...so far. We read that niche markets can help growers survive and, to some extent, this is true, but—realistically—how long can niche markets last before they enter the mainstream?

Growing the plant soon will be the easiest part of our business. Knowing the cost of production and selling at an assigned profit is what's tricky. Is it any wonder that most large businesses are run by accountants?

Jim Zablocki, Territory Manager, The Scotts Company, Northeast, can be reached at 603-224-5583.



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The Internet Connection

David Brock

This is the second of three articles about the Internet and how it could work for people in the Green Industry. The third article will give a brief history and broad overview.

So you've decided to take the plunge and connect your personal computer to the Internet. You've selected one of the on-line services mentioned in the previous article or, more preferably, chosen to connect directly to the Internet using one of the Internet service providers (ISPs) located in the New Hampshire area. With your modem-equipped personal computer, a phone number to dial the chosen ISP, and a software tool to see the Internet—the Internet browser—you're ready to "surf the net." But what does this mean? What are you looking for? How do you find it? What's available? And if you want to offer content for others to see about *your* company or allow the user to order from you, what's the next step?

Okay, I'm Connected, Now What? Prior to connecting, you should decide what you want to view once "on-line." Are you simply exploring, looking for something fun—a hobby or personal interest issue, or are you looking to "do some work?" Determine your road map before logging on—because the meter starts ticking once you connect. If this is your first time connecting to the Internet, you are, by definition, exploring. If you're a regular visitor to the Internet, a more specific, focused search may be in order. In either case, you will most likely use an Internet search tool or visit one of your favorite sites.

When you first make the connection (i.e., your computer dials the telephone number which then connects you to the Internet), you are usually directed to a pre-defined destination. You can set your preference of this launching-off point by configuring your Internet browser to go to a specific place on the Internet automatically. For example, if you are using a Netscape browser, it is

pre-configured to open the Netscape Corporation Web Site. If you choose, you can ask it to automatically open a different site—The Horticultural Web, for example. Choosing the web site you want to visit is accomplished by typing in the address for a given site, such as <http://www.horticulture.com> or <http://www.cpa.gov> or <http://www.gardens.com>.

These addresses are typed into a one-line dialogue box which is an integral part of your software browser. But, how do you know what address to type?

If you are familiar with the Internet, it becomes intuitive—think of Internet addresses as new "telephone numbers." They begin with (in almost all cases) "http://www." and end with either ".com" (commercial), ".gov" (government), ".edu" (education), or ".org" (organization). In the middle of this prefix and suffix are terms you are familiar with such as "ibm", "ge", "usda", "gardens", "newhampshire", "boston", "horticulture", and millions of others. By combining these, you can intuitively find many places on your own:

<http://www.ibm.com>
<http://www.ge.com>
<http://www.usda.com>
<http://www.unh.com>
<http://www.newhampshire.com>
<http://www.horticulture.com>
<http://www.gardens.com>

For many, however, the best place to start your visit to the Internet is with search tool as Listed in Table One. These tools are offered by companies whose sole purpose in life is to index all of the web sites available on the Internet (reported at over 200,000 and growing 10% per month!) and all of the pages at these web sites (estimated at over 15 million). By visiting one of these

TABLE ONE

INTERNET SEARCH TOOLS

<http://www.yahoo.com>
<http://www.search.com>
<http://www.altavista.com>
<http://www.excite.com>
<http://www.lycos.com>

Internet search tools, you can find almost any subject you are seeking. Type in a keyword at one of these web sites and the result of the search is a list of sites offering information about the desired topic. "Click" on one of the resultant sites from your search request and you are transported to that site and presented with the information found there.

Once you become familiar with these new "telephone numbers," you will find navigating the Internet is not as daunting as some suggest. Over time, you will build a frequently visited "address book" of sites that you want to keep up with. Most Internet browsers allow you to build this address book by placing a "bookmark" on sites of interest. These bookmarks can then quickly be visited in the future without having to seek them out using a search tool or having to write them down on a piece of paper.

Offering Your Contents to Others

As a user of the Internet, you get to see other organizations' "content" or information. What about putting *your* company, products or services on-line and allowing others to communicate with or order from you? If you're willing to make the investment, you can get a high-speed connection to the Internet (which must be connected 24 hours a day, seven days a week), dedicate a computer and a person to develop and communicate your pages of information, and "hang out your shingle" for other to see. For many, this cost is too high and they elect to join another site, such as the Horticultural Web, which amortizes these costs over many clients. By soliciting the help of a company whose business is developing and deploying content on the Internet, you are tapping into the organization's technology and marketing expertise. For a one-time development cost and a monthly hosting (or maintenance) fee, you can offer your content for others to see. It can cost as little as \$400/year to have a one-page, four-color advertisement at one of these sites which provides information to users 24 hours a day, seven days a week. At The Horticultural Web, this charge also provides inclusion in marketing and promotional programs, free advertising of your site in industry trade journals, and inclusion at industry trade shows. Naturally, the more advances and sophisticated the site contents (i.e. multiple pages, databases, on-line ordering, etc.) the more cost involved, in some cases reaching tens of thousands of dollars. When compared to traditional print advertising or catalog creation, Internet promotion is much less expensive, yet more far-reaching in its ability to attract clients and allow them to communicate and respond in real time.

Using the Internet in Practice

Once the novelty of the Internet's vast hordes of information wears off, most users come to appreciate this tool as a far-reaching and expansive resource—whether for business, fun, learning, or communicating. Generally, this evolu-

tion resolves itself to two uses of the Internet WWW.

- For fun or education, most "surf the net" at will, generally without structure, exploring the deep and rich crevices of information available, allowing their thoughts to take them where they will. The same is generally true for learning, although a more refined search is useful if a specific topic is required.
- In business, where efficiency and productivity are time-constraining, most users seek out a handful of sites which offer accurate and up-to-date information about their particular needs. In horticulture, these few sites might include a general site for horticulture, such as The Horticultural Web, your local supplies dealer such as E.C. Geiger, Penn State Seed, or McCalif Grower Supplies, a horticultural magazine, such as *Greenhouse Business* or *GrowerTalks*, your local Cooperative Extension, and university and USDA/EPA representative sites. To this you might add secondary sites, such as for financial update (PC Quote or *Wall Street Journal*), general news and information—local, regional, or national (such as *The Boston Globe* or *USA Today*), and the weather (National Weather Service).

Embodied in "fun," but sharing scope with business use of the Internet are commercial transactions. These are growing at a quick pace. Goods and services ranging from theater tickets to LL Bean merchandise, Hillcrest Nurseries herb cell packs, The Exotic Seed Company's unique seeds, The McCormick Report from *Greenhouse Business*, Fulex Insecticidal Smokes, and hundreds of other horticultural products can be purchased on the Internet. Future financial transactions on the Internet for personal as well as business purposes are estimated by some as 60% of all commerce by the year 2000!

By whittling down the number of sites you visit for business purposes, you can most efficiently find the resources or information you require and get back with the needs of the day—growing, shipping, satisfying customers, and making a profit. This is not to suggest that you should limit the number of Internet sites used in your business. But use your "free" time to explore and learn about other and new business sites and, if appropriate, add a new site to your business list or replace an existing one with a better one, in order to keep these sites to a minimum and your use of the Internet as a business resource a productivity enhancer, not a time-waster. If the few sites you have chosen are dedicated to providing you timely, accurate, and updated information, you will be well rewarded by leaning on them to "surf the net" for you, saving you the time of keeping up with the enormous and ever-increasing amount of information available.

David Brock is business manager of Web Developers, Inc., 226 Washington Street, Woburn, MA 01801. He can be reached at 1-800-WWW-6WEB or at <http://www.horticulture.com/brock@horticulture.com>



French Farm Greenhouses & Garden Shop

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"FRENCH POND," "French Road," "French Pond Road"—the place names suggest that the family's been around awhile. The first French came here around 1868, right after the Civil War. Currently, Durwood and Barbara French live in the house at French Farm Greenhouses; Michael (Durwood's son) and Zoe French live in the original farmhouse at the beginning of the road.

The presence of the family seems a constant, but the land itself has seen dramatic changes in use. Levi, Durwood's grandfather, planted the first commercial apple orchard in the state, producing 10,000 bushels a year before leaving the business with the decision not to put in a cold storage; Durwood raised chickens in the early fifties—the sudden preference for broilers—not fowl—ended that; he worked for the state as the first director of the division of pesticide control; then returned to dairy, but because of the economics of the milk market, he decided to sell the herd—just before the government buyout of small operations. The farm's current metamorphoses is as a retail greenhouse and farm stand.

These uses—though varied—have all been agricultural and the rural feeling remains. French Road is still dirt; the field abutting the greenhouses opens onto other fields and a view of the hills in Weare. "We're

out in the country and we want to preserve that feeling," Zoe says; "we pride ourselves on not paving the driveway and in having no cement or crushed stone in the greenhouses."

The first greenhouse—a home-made 20'x40' double-poly with fiberglass ends—was put up 20 years ago. At least three additions have extended its length to sixty feet and put a 25'x50' addition known as "The Fuchsia House" (fuchsias are a specialty) onto and perpendicular to the end.

Ten years later, a second house was built beside it. This is solar—17'x30', with a vertical north wall, heavily insulated, and a broad, gently sloping south-facing fiberglass roof. In 1990, a 28'x80' Ed Person hoop house was put up; the following year another, slightly smaller, Person house was added.

In 1993, Zoe joined the business ((previously, she'd worked eight years as director of retail sales for the New Hampshire Audubon Society). The next year, Michael joined as well and it became important to expand to a size that could support two families. In April, 1994, a 28'x100' New Englander (a state-of-the-art house with biotherm bench heat) was put up; in April, 1995, a secondhand 30'x100' inflation buster was added and later last year, two 14'x60' tunnels to be used for grow-

ing tomatoes were put up as well.

The only change now contemplated is to tear down the original greenhouse/Fuchsia House and replace it with two tunnel houses. This will be done for efficiency, not increased space, and will probably be done this fall.

THE SEASON BEGINS in February when seed geraniums are started in a home-made germinator (3'x12', 7'-high; shelves, bottom heat, light on timers) in the barn; then plugs are begun in the solar house and more seed ("we buy in mostly plugs; some of the unusual things we can't find in plugs we start ourselves") on the heated benches of the New Englander.

Sometimes customer demand affects choice of plant material—white marigolds ("marigolds should be yellow") were not grown until this year—they sold out and will be grown again. But basically, "we grow what we like." They produce over 1000 hangers—all in 10" swirls—fuchsia, ivies, some Proven Winners—"nothing finicky—we choose plants customers will have good luck with. They do well because we make good choices."

One house is kept cool for the Martha Washingtons (grown for the first time this year), pansies, ivies, vinca...by mid-April, most of the houses are full.

"We're very low-tech, but this

makes us very labor intensive." All transplanting (606s, 4 1/2" pots, some 3 1/2s—green whenever possible—aesthetics are important) is done by hand; a bench, pots, and bags of Promix are moved to each house. All watering is done by hand ("we are looking into some automation, but we're not sure what yet"); feed is applied with a dosatron.

They do buy in some perennials and nursery stock, but "all the annuals are our own." The houses are only twelve feet apart ("just wide enough to get a tractor with a bucket loader in for snow removal") and the tightly spaced range frames two sides of the central selling area. Material brought from the houses is set out on weed control mat. Under an old MacIntosh apple and a Black Tartarian cherry—"which is in full bloom—and just beautiful—around Mother's Day," is a table with a cashbox and a couple of chairs. There are no little wagons, but a pile of trays people can use to carry their purchases.

There's signage—right now it's name and price in magic marker, but signage "saves a lot of time spent in answering questions" and next year it may be commercially made, with basic cultural information and a color photo of the plant in flower.

Durwood and Barbara are enthusiastic gardeners and their own garden is right across the driveway. Personal and obviously not a show garden—the feeling is "country," of an overgrown cottage garden, with lots of roses and iris and a long bank of delphiniums about to come into bloom. An unintended result is in sales: "people buy what they see blooming—they know they can grow it here."

There's very little spraying—Durwood dusts the seed with Captan before sowing and Subdue is incorporated into the soil mix. There may be some Captan applications

(for botrytis)—but unheated greenhouses in winter are an excellent insect and disease control.

IN MID-SUMMER, the farm stand opens. A wooden frame painted red and covered with a canvas roof, it's built onto a trailer that's hitched onto the back of their truck and driven each day to the Country Spirit Plaza in downtown Henniker. "We sell what we grow—we don't buy in" and emphasis moves to their three acres of vegetable production.

The land is a ridgeline of clay/sand/gravel. Every spring, they pick up rocks, then spread cow manure and broadcast 23-12-18.

Crops ("everything but peas") include three varieties of potatoes, several of lettuce (the number is expanding) and peppers, herbs, Indian corn—and lots of sweet corn. They grow "outstanding" cantaloupe and watermelon—"People don't believe they're grown here. We start the plants in the greenhouses and transplant them around Memorial Day." (This year, the corn was started in the greenhouses as well.)

Everything's grown on plastic; 8-16-16 is applied to the row and transplants are given a start of water. The land holds moisture well and there seems to be no need for irrigation; insect control consists of "a lot of hand-picking of squash and potato beetles."

Ultrasweet tomatoes ("we tried five varieties—we all agreed these were the best") grown in hoop houses are ready in mid-July.

Through mid-September, vegetables are harvested every morning, cleaned with a hose on an outside table ("we are *very* particular"), and packed onto the farm stand by 8:30. They set up in the plaza parking lot and are open at nine. They stay open until six five days a week; on Saturdays, they close at one.

Barbara and Zoe take turns at the

stand (the other is selling plants at the farm). If the stand runs out of an item, the person there calls the farm; whoever's there picks, cleans, and gets it down to the plaza. They sell to restaurants as well and deliveries are made in the afternoons... it's a busy time.

Unsold produce is stored overnight in a bank of refrigerators in the barn, but, as Zoe says, "we are very particular."

In the fall, they sell mums at the stand—along with squash, pumpkins, corn...when the corn runs out, the season ends and Durwood and Barbara go to Florida until February; Zoe and Michael stay to sell hay (they mow 50 acres), maintain the animals (some "all-natural" chickens raised for meat and Scottish Highland beef cattle—"very thrifty: they grow well on just grass"), and keep the snow off the empty houses. Unsold perennials—and mouse bait boxes—are laid between two layers of weed control mat; snow is counted on for insulation.

EXPANSION IS CAUTIOUS—without debt and without violating a firmly-held aesthetic of "country." They acquire "old stuff"—used furnaces, for example: each house has two—a main furnace and a backup—most are second-hand, any needed repairs being done by Durwood and Michael. Not everything's second-hand—there are backup propane units and, most recently, a new generator ("five or six years ago, power was off for five days—we're at the end of the road and the last to be fixed")

An extreme example of "old stuff" is the shop. A new neighbor renovating an old house decided to remove a three-season porch. The structure was jacked onto a flatbed truck and brought to its present location. This year, it's in place; next year, it'll have electricity.

Both Zoe and Barbara have expe-

rience in retail marketing and the shop is their project. Again—very sure of their taste ("if we wouldn't want it in our own gardens, we don't buy it"), they specialize in containers and garden ornaments. High-end and out-of-the-ordinary, much of it imported; stone and terra cotta seem to dominate.

Since Zoe's been working here, marketing efforts have increased. A logo's been chosen (from a book of copyright-free art); official directional signs are on the main roads and "greenhouse" signs at several crucial turns. French Farm now advertises in seven local publications ("for an operation of our size, this is a lot") and plans to increase the number.

But the real marketing is done on a customer-by-customer basis. "We work hard to keep them through education and personal contact—we know many by name and many

more by face—there's always a friendly greeting." And customers—no longer just local—are loyal. "They return year after year—they just like it here."

What attracts them? The quiet, the view, the lack of obvious technology, the field of vegetables coming right up to the lawn, and the range of material that seems to be growing everywhere naturally; the sense of continuity—the feeling that the farm has been around awhile—these aspects reflect current perceptions of what entails "country" in New Hampshire. People want this for themselves and French's supplies both a template and some of the material.

And the peacocks—if the vista toward Weare dominates the left, peacocks penned in a weathered storage shed dominate the right. Amazingly, peacocks have been a part of the place for a long time—a pair

were given to Durwood and Barbara on their fifth wedding anniversary. The birds mated and prospered and currently there are nine. ("They're simple to care for—they eat game bird crumbles and water and, in winter, live in the barn.")

Perhaps the peacocks say something about the romantic side—the conscious choice to live a "rural" lifestyle, the emphasis on aesthetics—of what's basically a pragmatic, labor-intensive business. But a balance between these opposing aspects—"romantic" and "pragmatic"—seems to have been found and the result is neither sentimental nor contrived. In fact, it's very refreshing. (B.P.)

French Farm Greenhouses & Garden Shop is at 27 French Road (follow the signs from Rtes. 202 & 9) in Henniker, NH 03242. The phone number there is 603-428-3383.

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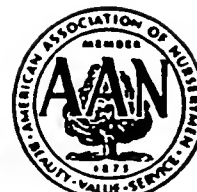
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"All the better to fly to the next tree with, my dear," said the big, bad, winged aphid.

Also amongst the aphids will be an assortment of their natural enemies: ladybugs, lacewings, parasitic wasps, predatory flies and midges. Many of these are commercially available. However, it is the predatory midges which seem to work the hardest for the concerned arborist.

A New Hampshire nurseryman reported tremendous success using the commercially-produced aphid-predatory midge *Aphidoletes aphidimyza* last year on a wide variety of his nursery stock.

An apple grower from Washington regaled with the story of her success combatting the problem of aphids in her orchard.

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tion facility wiped out aphids in the pecan trees in front of its administrative offices in as little as three weeks.

The midges are supplied in a moistened vermiculite medium as soon-to-hatch puparia (the third major stage of metamorphosis). Upon completing the pupal stage, the fragile-looking, mosquito-like adults are released under the tree to be treated. The adults, being the very accomplished and nomadic searchers that they are, fly up into the limbs to seek gatherings of aphids.

Once they find them, the midges don't eat the aphids—nor do they discuss the weather. They do, however, lay eggs. The eggs hatch and the larvae (the second major stage of metamorphosis) simply go to town. "Bite an aphid in the (knee) leg; inject a paralyzing toxin; eat the doomed aphid or leave it to die while going on to the next one—that's all we ever do," complains the small, dull orange, worm-like larva.

It's true. That's all they do. And they do it well. Assuming no sprays have been used yet, give the native midges a hand by allowing the *Aphidoletes aphidimyza* to roam free...in your tree.

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The Controversy Surrounding Purple Loosestrife

John Weaver

Purple loosestrife, or *Lythrum salicaria*, (Figure 1) has two things in common with the Wicked Witch in Snow White: it is very beautiful (the witch's beauty was second only to that of Snow White) and it is very wicked (the Wicked Witch was—well, a wicked witch and didn't have much choice). Opinions on purple loosestrife vary: some view it as a harmful non-indigenous species; to others, it is a beautiful perennial plant. My opinion is that, like the Wicked Witch, purple loosestrife is very maligned and only acting in character. In Europe and Asia, it is a respected citizen of its environment. Only in North America, without its natural enemies, is it a problem.

Opinions as to the effects that purple loosestrife has on the environment also vary. A large group of wildlife biologists presently contend that it has an obvious detrimental effect and present the following scenario: purple loosestrife invades natural wetlands and displaces many native plants, such as cattail and sedges. This, in turn, causes an exodus of the herbivores (muskrats and other animals) who eat these plants. Purple loosestrife has very little nutritious value to most species of wildlife. Many species of birds, including marsh wrens, least bitterns, ducks, and geese, join the exodus as well. The displacement of waterfowl, especially, has raised the concerns of the Department of Interior's U.S. Fish and Wildlife Service. The United States Department of Agriculture (USDA) also recently decided to recognize purple loosestrife as an agricultural pest on the bases of its presence in a few agricultural crop situations.

However, not all scientists share this opinion. A small group of ecologists, led by Mark G. Anderson, a former graduate student at the University of New Hampshire, argue that the wildlife biologists' scenario may be blown out of proportion or is at least lacking strong supportive data. Many people enjoy purple loosestrife just for its beauty. In fact, the first plants noted in New Hampshire (Conway, August 1875) probably originated from cultivation. Commercial bee-

keepers like the plant as well and benefit from it by placing their hives in fields of purple loosestrife in late summer. Most of their preferred hive sites in July and August are near loosestrife because, before goldenrod and asters bloom, many other honey-productive summer flowers have faded.

The U.S. Fish and Wildlife Service and the Department of Natural Resources (DNR) began an aggressive program to control purple loosestrife, especially in the Midwest, about 20 years ago. Their early control methods included the physical removal of plants, mowing and regulating water levels in marshes, and the application of herbicides registered for use in wetlands. All of these control methods were very labor-intensive and expensive and, in most situations, did not provide a very successful or long-term solution to the problem.

About ten years ago, some states passed legislation officially recognizing purple loosestrife as a noxious weed, thus restricting its sale and distribution. However, the new law for many of the states became a "regulatory nightmare," because it applied only to *Lythrum salicaria*, which could not be distinguished from *L. virgatum* or the many cultivars of *Lythrum* (most of which have resulted from various crosses between these two species). Thus, no one could effectively enforce the ban on loosestrife. Many states consequently broadened their regulations to include all cultivars and non-native species of *Lythrum* so that their previous restrictions on purple loosestrife could be enforced. (Winged lythrum, or *Lythrum alatum*, is our only native species of *Lythrum*.)

Commercial growers and nurserymen protested, claiming that several of their cultivars were sterile, and that the broad ban on loosestrife was unjustified and would hurt their business. The experiences of some gardeners seemed to justify their reaction: "Despite the profuse blooms on my [Dropmore Purple], I have *never* seen any seedlings develop around them." But other gardeners had different stories: "A few years ago, I purchased several varieties of [loosestrife].



FIGURE 1.
Purple loosestrife
(after Bailey, 1916).

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... All were guaranteed to be sterile ... I closed my home in October while they were still in bloom. Imagine my surprise the next spring when, upon returning to the house, I found hundreds of volunteer seedlings in every barrel, planter, and surrounding garden." It would appear that loosestrife follows no rules.

However, there is an explanation to these seemingly contradictory observations, and it is found in the plant's specialized method of reproduction.

Purple loosestrife (Figure 2) has three types of flowers, with only one type per individual plant. These trimorphic flowers each differ by having the pistil varying in length (heterostyly), being either short (3-5 mm), medium (7-8 mm), or long (9-12 mm). Each type of flower also has two different whorls of stamens that also vary in length, but are never the same length as the pistil or each other. These can be observed easily without magnification.

Seed-set is highly favored when a pistil receives pollen from stamens of similar length (these kinds of crosses are called "legitimate"); if pollination occurs in a different manner ("illegitimate crosses"), seed-set is extremely suppressed. Therefore, the pollination strategy of *L. salicaria* strongly favors outcrossing among individual plants having different flowers, and this reproductive barrier is called self-incompatibility, or SI.

This interesting facet of nature was first recognized by the Dutch botanist, Clusius, in the 1500s and later became the fascination of a certain English biologist named Darwin. The natural selective advantage of having three flower morphs, as opposed to only two, is that all individuals will have two-thirds of the population available for successful

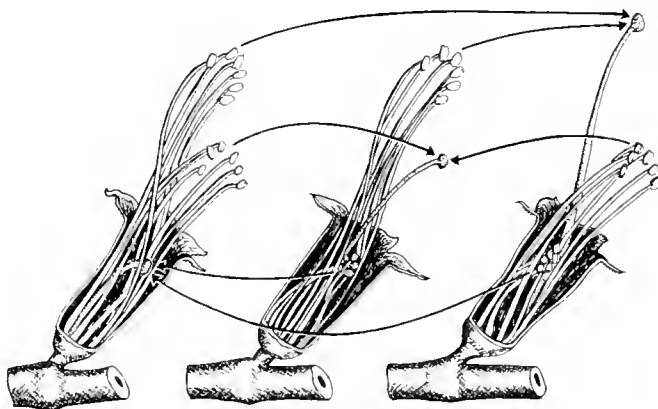


FIGURE 2. TRIMORPHIC FLOWERS OF PURPLE LOOSESTRIFE: only one kind of flower on an individual plant, each with one pistil, and two whorls of stamens, being either long, medium, or short, seed-set is higher when the pistil receives pollen from stamens of similar length, as shown by arrows (after Heywood, V. H. ed., 1993, *Flowering Plants of the World*).

outcrossing, instead of only half, thus increasing the odds of each flower bearing a maximum seed-set. Perhaps the difference between two-thirds and half of the population may not seem like a lot, until you consider that an individual plant can have as many as 3,000 flowers.

It is now clear how some people may have had different experiences with "sterile" varieties of *Lythrum*. However, you still would be justified in asking if it isn't possible that some of the available cultivars of *Lythrum* might actually be safe and sterile. To address this question, Drs. Neil O. Anderson and Peter D. Ascher, Department of Horticultural Science, University of Minnesota, have conducted thorough investigations on the fertility of purple loosestrife and several of the cultivars of *Lythrum*. I contacted Dr. Anderson and he was very glad to share his results, as well as explain the misuse of the term "sterile:"

The confusion regarding whether or not these cultivars are "sterile" arises from a misunderstanding of terminology. All *Lythrum* species and cultivars possess self-incompatibility (SI). An old term for SI is "self-sterility". Unfortunately, when this latter term is used, it is easily confused with true genetic sterility. We now have enough evidence to say that no purple loosestrife cultivar is sterile. Most cultivars are SI, but they produce large quantities of seed when used as either male or female parents in crosses. In several cases, the cultivars are as fertile as the *L. salicaria* populations.

Some growers still might protest that it is absurd to consider a few garden specimens of purple loosestrife a threat to the environment. However, they should consider that every plant has the potential of producing 1.5 million seeds



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annually that are easily dispersed and remain viable for at least five years. Bees and wasps are effective pollinators of loosestrife and provide the means for legitimate crossing, perhaps even for isolated plantings. A few plants can quickly become a large infestation that is virtually impossible to eradicate and a one-acre field of loosestrife can produce 24 billion seeds per year.

Researchers are still looking for ways to restore balance to our marshlands. For the past five years, Dr. Richard Malecki, U. S. Fish and Wildlife Service, and participants in DNR have been investigating biological control methods. The Biological Control Program of USDA has joined the fight against loosestrife as well this year. Six herbivorous insects from Europe have shown potential as effective biocontrol agents of purple loosestrife: two leaf-feeding beetles, one root-feeding weevil, and three flower-feeding insects. Some of these insects have been released in infested areas in North America, and others are now being reared in lab insectaries for future releases. Purple loosestrife is rather formidable, and it may take the combined efforts of all of these insects to displace loosestrife from areas where it has become a dominate plant. Last year, some of these beetles were released in New Hampshire for the first time.

All witches are not bad witches. All loosestrife is not bad loosestrife. We are hopeful that biological controls will bring a happy ending.

John Weaver is Survey Entomologist in the Plant Biology Department at the University of New Hampshire in Durham. His phone number there is 603-862-1737.



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August is here. For some growers, your season is behind you and for some, the final months of your season are just ahead, with mum and poinsettia sales around the corner. Now is the time to begin assessing/estimating your year-end financial results. So if you are a little behind on your book-keeping, now is the time to play catch-up. It's important to do this exercise so you know about where you stand. Good records are essential to your business. They do not have to be fancy—they can be kept manually, through a mail-in service, or inputted in an accounting software on your business computer. In order to do year-end tax planning, consider capital purchases/improvements, thoroughly analyze operations (i.e. labor and gross sales), or submit a loan proposal for bank financing, current and accurate records are needed for you to make well-informed management decisions. (S.W.)

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I guess the saying about changeable New England weather is holding true for this season. The conditions have certainly been wetter than last summer (at least as of July 5), and the number of samples received during May-June is indicative of the environmental conditions favorable for disease development. The cool temperatures and high moisture levels during June were favorable for the development of botrytis blight, leaf spots, anthracnose diseases, needle-cast infections, root rots, and bacterial blights. Problems related to drought stress are still common on nearly all woody ornamentals (tip die-back, small leaf and needle size, and sudden wilting during high temperature periods). Hemlocks and white pines are showing significant needle yellowing and browning as well as needle loss.

Fungal tip blights and cankers, including DIPLODIA (SPHAEROPSIS) TIP BLIGHT and CYTOSPORA CANCER on conifers, KABATINA TIP BLIGHT on junipers, and PHOMOPSIS TWIG BLIGHT (junipers, rhododendrons) are more common this year. The effects of drought stress predisposes plants to infection by these (and other) fungi. ANTHRACNOSE has been diagnosed on maples, dogwoods, and oaks. (The wet weather during leaf expansion was ideal for infection.) FIRE BLIGHT has been common on crabapples and severe SCAB infections are beginning to cause early defoliation on susceptible cultivars. The wet conditions during needle emergence was also ideal for NEEDLECAST infections (cyclaneusma on Scotts, plio-derma on Austrian, rhizosphaera on spruce), so we can expect to see symptoms in 6-9 months. Symptoms of DUTCH ELM DISEASE are beginning to show on elms (DED is accelerated by drought stress. The same pattern developed in the 1993 growing season.). Birches, particularly *B. pendula* cultivars, have been hit hard by BRONZE BIRCH BORERS (drought stressed trees are more prone to attack). Check for the characteristic raised areas beneath the bark.

Several turfgrass diseases appeared 'on-cue,' while others appeared earlier than usual. SNOW MOLD was a common problem, particularly on home lawns. DAMPING OFF OF SEEDLING BLIGHT caused by pythium was a problem in newly seeded areas. In most cases, the disease was exacerbated by over-watering. BROWN PATCH is already evident in some home lawns.

The major problem in greenhouse crops was BOTRYTIS BLIGHT. The high humidity and cool temperatures were ideal for fungal development. Remember: sanitation and good air circulation go a long way in management of botrytis. One case of BACTERIAL BLIGHT on geraniums was confirmed (refer to earlier issues of *The Plantsman* for symptom descriptions and controls). BACTERIAL LEAF SPOT on impatiens, caused by pseudomonas, was detected in two samples. The leaf spots are tan with a light center; infections may also appear as dark, water-soaked areas between the veins. Infected plants should be removed. POWDERY MILDEW was a problem on New Guinea impatiens and petunias. Increasing air circulation and fungicide sprays held the problem in check.

The usual diseases have begun to appear on annuals and perennials, but in greater intensity than last year. BOTRYTIS BLIGHT was diagnosed on poppy, tulip (tulip fire), peony, and roses. SCLEROTINIA STEM ROT was identified on artemesia. Sclerotinia is characterized by white, fluffy mold near the base of the stem and hard black sclerotia that form in the collapsed stems. Infected plants should be removed immediately, as well as the soil surrounding the roots.

A few interesting problems have shown up on vegetables. Bailing twine that was treated with a petroleum-based preservative caused twisted and distorted growth on any portion of the plant that came in contact with the twine. Once the twine was removed, there was no further development of symptoms on subsequent growth. Several cases of growth distortions (elon-

gated leaves, curling) on tomatoes grown in high tunnels was attributed to uneven distribution of granular fertilizer prior to planting.

Most of the diseases that occurred during May-June will continue to cause problems during the rest of the growing season, especially if we continue to have frequent rainfall. As the temperatures rise, additional diseases such as BROWN PATCH and PYTHIUM BLIGHT on turfgrasses usually become more prevalent. SCLEROTINIA ROOT ROT on herbaceous plants is also more severe with moist soil conditions and warmer temperatures.

If you have had a problem with needlecast on spruce in the past, remember that RHIZOSPHAERA often has a second infection period during late-August through early-September, so you should apply a fungicide at this time. SLIME MOLDS begin to appear (literally overnight) during moist periods in July and August. They are most commonly seen growing on bark mulch. The fungi don't pose a threat to plants, but they are unsightly. They can be removed by raking or with a strong stream of water. (But you can expect them to reappear elsewhere!) Remember to begin your sanitation efforts during August. A little effort goes a long way to prevent disease and insect problems.

I also want to thank everyone for their patience during our move to Spaulding Hall. We are nearly settled into the new facilities, although we're still trying to locate a few 'lost' items. Parking is a problem, but there is a 30-minute loading zone space at the south end of Spaulding Hall (and an elevator for those large samples).

If you wish to submit plant material to the UNH-PDL for diagnosis, send samples (with a check for \$12.00) to: The UNH Plant Diagnostic Lab, C/O Dr. Cheryl Smith, Plant Biology Department, 241 Spaulding Hall—UNH, Durham, NH 03824. Samples should be accompanied by an identification form (available from your county Cooperative Extension office). Cheryl Smith is the UNH Cooperative Extension Specialist in Plant Health, and can be reached at (603) 862-3841.



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Dear NHPGA Members:

One issue that needs to be addressed as soon as possible is the greenhouse taxation and use laws. Several months ago, I drafted a letter to Representative Leighton Pratt (r, Lancaster), who is very interested in pursuing this issue. Recently this letter was submitted, along with those from several other agricultural groups, in order to begin the process of legislation in this area.

—Bob Rimol

Dear Representative Pratt,

On behalf of the New Hampshire Plant Growers Association and in conjunction with other agricultural groups, we are requesting that you introduce legislation regarding the classification of temporary plastic covered "hoop houses" as personal property or equipment; the exemption of such equipment from taxation; and reinforcement of RSA21:34-A, the state's definition of a "farm," which includes the production of greenhouse crops. Presently, New Hampshire has no state laws or guidelines on "temporary greenhouse structures", and there is a great deal of inconsistency between the towns within the state. Many towns do not allow "by right" either temporary or permanent greenhouse structures in agricultural zones. While some towns are more remote or agriculturally oriented, there are some towns that just do not understand or encourage greenhouses for agricultural use.

Our Association represents over 250 greenhouse operators in the state of New Hampshire, and is a segment of ornamental horticulture that is the state's leading agricultural industry with revenues exceeding \$100 million dollars. Several states in the Northeast currently have laws regarding greenhouse permits and taxation for temporary structures. If a plastic-covered greenhouse is not constructed upon a concrete foundation and can be moved without damage to itself, it should be characterized as personal property or equipment.

Temporary greenhouse structures are very important to agriculture and the New Hampshire economy. Typically, quonset/coldframe greenhouses are the starting point for most horticultural operations, since they can be built on a small scale and are more affordable. This is a very key element for small businesses starting out. Over the years, several New Hampshire operations have grown to be quite large, creating many jobs for New Hampshire workers. Plastic hoop houses are used for many types of agricultural use, including flower production, propagation of all types of plant material, calf barns, vegetable growing, fruit growing, and over-wintering of nursery stock. Therefore, greenhouses are a vital element in increasing agricultural output. If their use is understood, both small business owners and local communities can benefit.

We feel that the timing is right to introduce legislation, since New Hampshire is primed for growth and towns have to cope more with taxation and building issues. We would be willing to offer our services/ input to help you write the correct legislation. When government and industry can work together, we can all benefit in the long run.

Sincerely,

New Hampshire Plant Growers Association

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TWILIGHT MEETING

**Wednesday, September 11
Murray Farms Greenhouse
River Road
Penacook, NH**

The third Twilight Meeting of the year will be at Murray Farms Greenhouse in Penacook. It's been nearly four years since the New Hampshire Plant Growers' Association has been the guests of Murray Farms Greenhouse and now there are four years of change and improvement to see.

The most spectacular change is their new wood chip gasification heating system (they load it with wood chips only once a week), but other aspects are equally interesting: trough watering for 1020 trays, a Wadsworth environmental control system, a new mum irrigation system, poinsettias in production...and much, much more.

The meeting begins around 5:30. There will be a tour; refreshments will be served.

For information, contact Dave Murray at 603-753-6781.

DIRECTIONS:

Take Exit 15 West off I-93 to Rte 3 North; Go 3.2 miles (past state prison) to Bog road on your left. Go 2.2 miles on Bog Road to a four-way intersection. Go right onto River Road. Murray Farms is 1/2 mile on the right.

About the Cover

Prudence (detail)

Engraving based on design

by Pieter Bruegel the Elder (1525-1569)

In sixteenth-century Belgium and Holland, Prudence was regarded as the first and most important among the cardinal, or non theological, virtues. It was not merely caution or circumspection; it was wisdom, good sense, "foresight in the service of virtue."

Prudence herself stands surrounded by objects symbolizing aspects of this virtue: the ladder and buckets (obviously fire-fighting apparatus: the prudent person quenches any conflagrations of passion before damage occurs), the colander (for sifting good from evil), the mirror (self-knowledge), the coffin.

The virtue of foresight—an aspect of Prudence—is illustrated by the women preparing meats and other foods for storage; the great wooden tubs, when packed, will go into the cellar; behind the women, a man hoists twigs into the barn to serve as fuel during winter. Farther back, a group of men repair a house, prudently providing against its fall. And still closer to the horizon, men repair a dike so that it may not crumble and let in the ever-threatening sea.

To the left of Prudence, a man pours coins into a chest for safekeeping. This is not Avarice, but Sense—precaution in protecting one's rightful possessions.

In New England, Prudence seems appropriate to early fall, when the first actions are taken to temper the effects of winter. (B.P.)



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